DOCUMENT RESUME

ED 189 497 CG 014 522

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TITLE A Comparison of Computerized and Psychometric Feedback of the Results of the California Occcupational Preference System.
PUB DATE 79
NOTE 22p.: Paper presented at the Annual Meeting of the Southeastern Psychological Association (25th, New Orleans, LA, March 28-31, 1979).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Comparative Analysis: *Computer Assisted Testing: Cost Effectiveness: *Ethics: *Feedback: Innovation: Occupational Tests: *Psychometrics: *Testing Problems: *Test Interpretation

ABSTRACT

The practice of not sharing tests results with clients may soon be in conflict with the Ethical Standards for Psychologist (sic). Studies using self-validation of feedback information to study feedback parameters have shown that the form of feedback is less important than the content. To investigate direct feedback of test results by computer, the California Occupational Preference System (COPS) was administered and feedback provided to 34 male and 40 female college students. Half the subjects completed the test and received feedback of the COPS by a time-sharing IBM computer system, while the remainder of the subjects were tested using standard paper and pencil procedures with type-written feedback. The two procedures were rated on six-point rating scales as equally accurate and useful. The computer procedure was described in positive terms significantly more often than the standard procedure in an open-ended discussion question. The feasibility of using the computer to assume all aspects of assessment in vocational testing was supported by client reactions and in a cost analysis comparison. (Author)

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ED189497

Conference noted on release form. C.K. Jaslow

A Comparison of Computerized and Psychometric Feedback of the Results of the California Occupational Preference System

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CG 014522

Running head: Computerized and Psychometric

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A Comparison of Computerized and Psychometric Feedback of the Results of the California Occupational Preference System

Although every year several hundred million psychological tests are administered in our country to children and adults (Goslin, 1963), it is still a common practice of many professionals not to share the results with the individuals who have participated in the assessment programs. Two major issues are generally advanced for this omission to provide feedback of tests results (Apanasiewicz, Note 2). The first reason is derived from early studies in which it was reportedly shown that individuals are for the most part unable to distinguish between accurate and false test feedback and generally tend to highly endorse test reports written in a stereotyped "P.T. Barnum" style (Dies, 1972; Forer, 1949; O'Dell, 1972; Stagner, 1958; Sundberg, 1955). In addition it has been a common belief that valid feedback can be harmful to the unsophisticated individual.

Beginning in the early 1960's, however, a small number of professionals challenged the traditional practice and reasons for withholding test results from clients (Fisher, 1970; Rudikoff and Kirk, 1959; Bringmann and Allen, Note 3; Bringmann, Balance and Krichev, Note 4). Methods for sharing tests findings with the clients have been empirically compared

and have, in an increasing number of studies, involved clients' self-validity of standard psychological tests. Concern with the question of professional accountability has also led to court rulings in which school officials have been instructed to share student records, including test scores and test interpretations, with parents. Most importantly, the draft of the Ethical Standards for Psychologist of the American Psychological Association which is likely to become effective in the near future also takes an unambiguous stand in favor of sharing test results with clients. Specifically, in Principle 8, Utilization of Assessment Techniques, it is clearly stated:

> ...Persons examined have the right to know the results, the interpretations made, and where appropriate, the original data on which final judgements were based. Test users avoid imparting unnecessary information which would compromise test security, but they provide requested information that explains the basis for decisions that may adversely affect that person or that person's dependents.
>
> a. The client has the right to know and the psychologist has the responsibility to provide explanations of the nature and the purpose of the test and the test results in a language that the client can understand, unless, as in some employment or school settings, there is an explicit exception to

this right agreed upon in advance. When the explanations are to be provided by others, the psychologist establishes procedures for providing adequate explanations (APA Monitor, March, 1977, 22-23).

In other words, individuals who take tests may have the right to receive their results including some of the original data in a language which they can understand, whether we like it or not. And furthermore, the psychologist is responsible to insure that feedback of test results is presented to the client. The only exception is where the client waives this right. Test security is to be maintained while fulfilling this responsibility.

Fortunately, we do not have to accept the APA pronouncements merely as a matter of faith, because we now posses a substantial number of studies dealing with the feedback process. Typically these studies administer tests and true and false feedback information to the clients and evaluate the validity or accuracy of the feedback by rating scales. Based on these studies the following general conclusions are possible:

1. Generally, feedback of psychological test results is welcomed by almost all clients as long as it addresses the realistic needs of the client (Campbell, 1965; Kamm and Wrenn, 1950; Berdie, 1954; Fisher, 1970).

2. Conversely, complaints about not getting feedback have been numerous. Balance, Sandberg and Bringmann (1971) suggested that not giving feedback of test results has contributed to the poor public relations of psychologist in America today.

3. Empirical studies have focused on a wide variety of testing and feedback parameters: included in these are oral versus written feedback (Holmes, 1964; Stone and Simos, 1948; Coletta, Note 5); individual versus group feedback (Folds and Gazda, 1966; Graff, Danish and Austin, 1972; Wright, 1963); style of feedback, personal versus impersonal (Bixler and Bixler, 1949; Geyde and Miller, 1970; O'Dell, 1972; Price and Johnson, 1973; Truxler, Note 6); and socially desirable and prestigious feedback (Balance, et al., 1971; Forer, 1949; O'Dell, 1972; Sundberg, 1955). Repeatedly, the form of feedback has been found to be less important than the content.

In summary, an honest but clumsy poorly written feedback is preferred over no feedback at all, and how the feedback is presented is not nearly so important as what is the content.

The application of the computer to the assessment process has generally been to administer and interpret the tests. Among the tests administered by the computer are the WAIS (Elwood, 1964; Elwood and Griffin, 1972), the MMPI (Dunn, Lushene

and O'Neil, 1972; Lushene, O'Neil and Dunn, 1974), and the Slosson Intelligence Test (Hedl, O'Neil and Hansen, 1973). Tests which have been interpreted by computer are the MMPI (Bringmann, Balance and Geisbrecht, 1972; Fowler, 1967, 69; Kleinmuntz, 1963, 69), the 16 PF (Karson and O'Dell, 1975), the Rorschach (Piotrowski, 1964) and the TAT (Smith, 1968). The Paitich study (1973) bases its interpretation on a battery of six tests. As can be seen a wide variety of test have been interpreted by computer. These applications have generally been satisfactory.

In conclusion, although the computer can be used to write psychological reports, it has not been used to give direct feedback to clients but to professionals who in turn present the feedback to the clients. It was the purpose of this study to determine if computers can be used to provide feedback of vocational interest test, since feedback is often provided to the subject about vocational test and because the results are unlikely to be harmful. Specifically, it was predicted that the feedback given by the computer would be rated just as accurate and useful as feedback shared by traditional methods. Moreover, it was expected that subjects would rate computerized procedures and standard procedures as equally acceptable.

Method

Subjects. The subjects consisted of 65 undergraduate and 9 graduate students enrolled in psychology courses at the University of South Alabama during the Winter and Spring school terms of 1978. There were 34 males and 40 females ranging in age from 18 to 39 years. The mean age was 23.5 years. All subjects were randomly assigned to the "Computer Group" and the "Standard Group". Subjects volunteered to participate in the study knowing that they would receive course credit for their participation in research. All subjects were informed that they would receive feedback information on an occupational interest test completed by them.

Instruments.

1. California Occupational Preference System (COPS). The COPS consist of 168 questions about occupational activities which are classified into seven "professional" and seven "skilled" occupational areas. Subjects express their vocational interest by indicating whether they like or dislike specific occupational activities "very much" or "moderately". The COPS was designed to enable the subject to broaden his vocational knowledge in the process of taking the test. It is also designed to be equally useful for college and high school students. Feedback of the COPS is

accomplished by providing the subject with a brief paragraph describing the occupational areas in which they are the most and least interested. A list of sample occupations keyed to the Dictionary of Occupational Titles and the Occupational Outlook Handbook is also provided on the profile sheet (The Seventh Mental Measurements Yearbook, 1972, 1402-1406).

2. Rating Scales. Six-point rating scales with descriptive cues at each extreme and near the median were used in each group. The scales were designed as recommended by Guilford (1954). Subjects were asked to write the value of their rating rather than marking it on the scale. Example descriptive cues are "little accuracy", "some accuracy" and "very accurate".

3. Open-ended Question. The open-ended discussion question was the last task for each group. Subjects were asked to comment about any aspects of the session in which they had just participated, good or bad. All subjects were asked to make some comment.

4. Computer Hardware and Program. The computer system which was used was the IBM S/370 with time sharing capability. An IBM Decwriter was provided for each subject in the Computer Group. The program used to administer, provide feedback, present the feedback rating scales and summarize each individual session was written in Fortran "G" computer language.

Procedure.

Computer Group. The Computer Group received typewritten instructions to gain access to the computer system and a description of the experimental session. After gaining access to the system, all communications and responses, except to the open-ended discussion question, were directed to the computer. First, the COPS instructions, which were adapted to the computer system, were presented. Next, the 168 COPS questions were presented and the responses stored in the computer memory. The responses were scored and profiled and feedback information, based on the three highest percentile scores, was presented. After the subject studied the feedback information, the three rating scales were presented and the ratings were also stored in the computer memory. A summary, for the experimentor's convenience, of the individual test session was the final computer output. The COPS feedback information, which the subject had studied before rating the feedback information, was given to each subject for his personal use after completing the open-ended discussion question. The approximate average time required for the Computer Group to complete a session was 45 minutes.

Standard Group. The procedure for the Standard Group was the same as for the Computer Group except that a 30 to 45 minute delay before the feedback information was presented was necessary to hand score and profile the responses. The standard IBM answer sheet was completed by pencil using the COPS Inventory Booklet. A type-written feedback, identical to the computer presented feedbacks, was presented to each subject. When subjects indicated that they had studied the feedback information sufficiently, type-written rating scales were completed. The subject was allowed to keep the feedback information after completing the open-ended discussion question. The approximate average time required for the Standard Group to complete a test session, including the delay for hand scoring and profiling, was 90 minutes.

Ratings by the Judges. Two first semester clinical psychology doctoral candidates at the University of Southern Mississippi served as judges. They sorted the open-ended comments into three categories: positive, neutral and negative.

Statistics. The feedback ratings scales were compared between the two groups by using the nonparametric Mann-Whitney U-test. The use of three descriptive cues on the scale resulted in an ordinal measurement; and therefore, Siegels's (1956) recommendations to use a nonparametric test were followed.

A Kendall Rank-Order correlation (tau) was used to evaluate the similarity of the judges' ratings. The sorting into three categories is at best an ordinal scale; and therefore, a Chi-Square (χ^2) analysis was performed on the ratings of the judges. The Standard Group served as an expected analogy and the Computer Group served as the observed data.

Results

The first prediction that the Computer and Standard Groups would rate the COPS feedback information to be equally accurate (U=673.5, z=.119, $p > .5$) and useful (U=680.5, z=.043, $p > .5$) was supported. For the second prediction, the judges' ratings of the discussion question were similar (tau=.6, z=1.69, $p < .05$); however, a significant difference was found in the manner in which subjects described the sessions ($\chi^2(3)=8.271$, $p < .05$). That subjects would rate the computer and standard procedures as equally acceptable was not supported. Content analysis revealed that the computerized procedure was more often described in positive terms than the standard procedure. Furthermore, providing feedback to clients was supported in that 76.4 percent of the comments were rated as positive. The form of administering and providing feedback of the COPS did not influence the subjects' perceptions of accuracy or usefulness of the feedback information, but it did influence the clients' reactions to the test session in a broader sense, acceptance, which was revealed in the open-ended question.

Discussion

The use of the computer to assume all aspects of assessment in the evaluation of occupational interest is supported by the clients' reactions to the COPS feedback information in this study. Clients accepted the computer mode of administration and feedback as readily as standard administration and feedback procedures. These results are in agreement with the results of other feedback investigations (Folds and Gazda, 1966; Forester, 1969; Gilbert and Ewing, 1965; See Notes 1, 5 and 6) in that the form of feedback had little effect as long as the content was accurate, jargon-free, and at least neutral. That subjects generally preferred to be informed of their test results is also in agreement with the underlying assumption of feedback studies in general. The significance of the preference for the computer mode of communication was unexpected and may refute the higher levels of anxiety reported to accompany computerized administration of tests (Hedl, et al., 1973). As society has become generally more accepting of computer technology, anxieties associated with computers may have lessened. That subjects preferred the computer mode, or some mode, of communicating feedback but found either mode to be equally useful and accurate is a conclusion repeatedly confirmed in the oral versus written studies, the individual versus group studies, the style of feedback studies, etc.

Two parameters which were introduced into the sharing of test results when the computer is used were the immediate presentation of feedback information and the novelty of using the computer. The immediate feedback of test results could only be accomplished by using the computer because of the physical impossibility of hand scoring, interpreting and profiling the responses in a fraction of a second. If subjects are the most receptive to the presentation of feedback immediately after completing the test, then feedback should be the most effective at that time. Procedures were implemented which partially controlled for delay of feedback by presenting the standard feedback as soon as physically possible, 30 to 45 minutes later. This almost immediate feedback may have resulted in biasing the responses in favor of the standard procedure since a more typical delay time would be at least one week. Research which utilizes more typical delay times in both the computerized and standard procedures may yield even greater differences of acceptance; however, research which controls for the subject's sophistication, novelty, of computers may reduce the difference in acceptance. Both of these issues merit further research.

A cost analysis revealed that in a situation where a maximum of five individual COPS are administered with feedback per week, the computer mode of communication was estimated to be $8.32 per test while the standard mode was estimated to be $5.46 per test. In an institutional setting where at

least 25 test per week are utilized, the estimated computer cost was $4.35 per test while the estimated standard cost was $4.66 per test. The break even point, where the cost of the two procedures are equal, was estimated to be approximately 18 tests per week. These figures reflect the cost to the clinic or institution and not to the client. In either mode of communication, the use of the COPS is neither cheap nor expensive.

In conclusion, this study supports the feasibility of computerized administration and feedback of the COPS both from the clients' reactions and economics. Further research is needed to reexamine these results with other population samples and other tests instruments. The effect on tests reliability and validity of computerized testing will also need to be investigated. The potential for the applications of computerized assessment, particularly in vocational areas, is tremendous.

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Footnote

This study is based on a masters thesis submitted by the second author in partial fulfillment of the requirements for the Master of Science degree at the University of South Alabama, Mobile, Alabama, under the direction of the first author.